

Groundwater

If you dig a hole and water begins to seep in, you have hit groundwater. It is simply the area beneath the land's surface where all the spaces between soil particles, or in rocks, are filled with water.



Deep soils help filter out sediment and pollutants as water from rain and melting snow percolates downward. Shallow soils are not as effective and, in karst areas, surface water may flow into the groundwater with little or no soil filtration.



In karst areas, groundwater can move 100 feet or more per day (in other areas, groundwater typically moves less than 1 foot per day). The water follows cracks in the limestone, moving deep and spreading out under the ground.

Eventually this water returns to the surface at a spring, river or lake. It can also be held deep underground for thousands of years, only reaching the surface again when pumped out of wells.

What can be done?

Once contaminants enter the groundwater, little can be done to remove them. The best, easiest and cheapest thing to do is to prevent contamination in the first place.

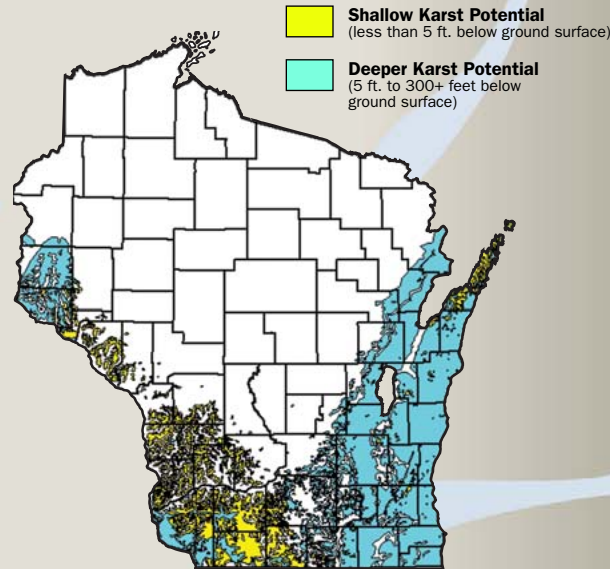
Specific suggestions can be found on the other side of this brochure.

Karst:

Why be concerned?

Where soils are shallow, karst conditions make it easier for groundwater to be contaminated with bacteria, nitrate and pesticides.

Even wells that are hundreds of feet deep can be contaminated.



Help is available

For more information about bedrock concerns, drinking water or cost-share programs, contact:

County Land and Water Conservation Departments
Public Health Departments
University of Wisconsin – Extension
USDA Natural Resources Conservation Department
Wis. Dept. of Natural Resources Service Centers
Wis. Geological and Natural History Survey
Wis. Dept. of Agriculture, Trade and Consumer Protection

Or web sites:

clean-water.uwex.edu/rockriver/groundwater
www.uwex.edu/wgnhs/karst.htm

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Karst

Avoid that



Sinking Feeling

Sinkholes, Limestone and Groundwater Contamination

Karst

What is it?

Karst refers to an area where bedrock such as limestone is easily dissolved by water. Karst regions are generally characterized by connecting cracks and layers between rocks that easily transport water and pollutants to the groundwater. Sinkholes, shallow soils, sinking streams and springs are found in areas of karst bedrock.



In karst areas, groundwater is threatened by:

Contaminated water from

- ✓ Barnyards and other areas where manure accumulates.
- ✓ Cropland where chemicals and manure are applied.
- ✓ Septic systems and household waste disposal.
- ✓ Roads and other paved areas.

This is a typical karst spring, but not all springs bubble out of karst areas. Many springs in Wisconsin flow out of deep gravel and sand deposited by the glaciers.



Sinkholes like the one above are often used to dispose of unwanted junk. Sometimes this junk can contaminate a well miles away.

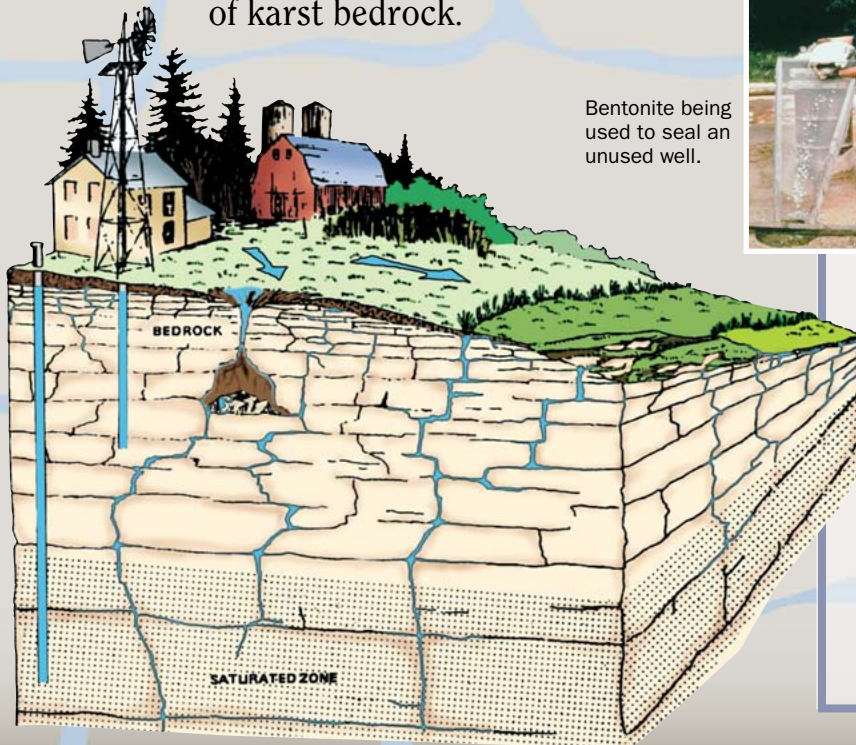


Caves such as this one can be an important home for bats and hibernating animals.

The fractures in the bedrock under shallow soil can be seen during a drought. The alfalfa was able to send deep roots down into the moist soil that had accumulated through the cracks.



Take action to prevent groundwater contamination in karst areas



Bentonite being used to seal an unused well.



In the community

- Use care when planning and constructing roads and ditches to avoid runoff draining into cracks in the bedrock.
- Provide "clean sweep" programs to properly dispose of home, business and farm chemicals.
- Consider geology and groundwater in land use planning.

Around the home

- Properly seal unused wells.
- Test wells annually for nitrate and bacteria.
- Pump your septic system at least every three years.

The water along this ditch disappears into a sinkhole, carrying with it oils, lead, salt and other chemicals from roadways.



On the farm

- Grow a grass buffer 10 - 200 feet wide, depending on site conditions, around sinkholes and crevices.
- Do not apply manure, fertilizers, pesticides or other agricultural chemicals near sinkholes.

- Any manure applied near sinkholes should be incorporated into the soil as soon as possible.

See your NRCS or LCD office for site-specific guidelines.

- Divert water away from sinkholes and crevices.

- Do not dispose of chemical containers, dead animals, or anything else in sinkholes.



A sinkhole without a protective berm before and during flooding. A berm would have prevented runoff containing fertilizers and pesticides from draining into the sinkhole.